AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) Method for deciding the direction to a flickering source in relation to a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from the flickering source, comprising the steps:

- at a measuring point, recording [[of]] an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- at the measuring point, recording [[of]] an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- demodulating the current signal (i(n)) and extracting, from the demodulated current signal, only the low-frequency amplitude variations in the form of a flicker component for the current signal (i(n));

- demodulating the voltage signal (u(n)) and extracting, from the demodulated voltage signal, only the low-

frequency amplitude variations in the form of a flicker component for the voltage signal (u(n));

- creating a product by multiplication of the flicker component for the current signal and the flicker component for the voltage signal;

- creating one of an average value of the instantaneous power signal (Π(n)) and a summation of the partial powers Pk wherein a flicker power (Π) is obtained with a sign value that indicates in which direction the flickering source is located in relation to the measurement point; and

- displaying an indication of which direction the flickering source is located in relation to the measurement point, wherein,

- said demodulation of the current signal step comprises the steps:

- creation of a first demodulated signal by demodulation of the current signal (i(n)); and

- filtering, by one of a band pass filer and a multiplication of weight distribution factors, the first demodulated signal to eliminate the signals that originate from the network frequency (f_c) in the first demodulated signal so that only the low-frequency variations remain in the form of the flicker component for current, and

- said demodulation of the voltage signal (u(n)) step comprises the steps:

- creating a second demodulated signal by demodulation of the voltage signal; and

- filtering, by one of a band pass filer and a multiplication of weight distribution factors, the second demodulated signal to eliminate the signals that originate from the network frequency in the second demodulated signal so that only the low-frequency variations remain in the form of the flicker component for voltage.

2. (previously presented) Method according to Claim 1, wherein the sign value of the flicker power is negative when the flickering source is located below (19) the measurement point (17) and the sign value is positive when the flickering source is located above (18) the measurement point (17).

3. (canceled)

4. (currently amended) Method according to Claim [[3]] 1, comprising the further steps of:

- filtering the signals that originate from the network frequency (f_c) in the first demodulated signal in such a way that only the low-frequency variations relating to the flicker component for current remain in the form of a flicker signal ($I_{LF(n)}$) for current;

- filtering ~~off of~~ the signals that originate from the network frequency in the second demodulated signal in such a way that the low-frequency variations relating to the flicker component for voltage remain in the form of a flicker signal ($U_{LF(n)}$) for voltage;

- creating an instantaneous power signal ($\Pi(n)$) by forming a product by multiplication of the flicker signal ($I_{LF(n)}$) for current and the flicker signal ($U_{LF(n)}$) for voltage; and

- processing the product to create the average value of the instantaneous power signal ($\Pi(n)$) whereby the flicker power (Π) is created with the sign value.

5. (currently amended) Method according to claim [[3]] 1, wherein,

- ~~the first demodulated signal is created~~ creating the first demodulated signal is by square demodulation of the current signal; and

- ~~the second demodulated signal is created~~ creating the second demodulated signal is by square demodulation of the voltage signal.

6. (currently amended) Method according to claim [[3]] 1, wherein, the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 35 Hz.

7. (currently amended) Method for diagnostics at a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from a flickering source, comprising the steps of:

- recording [[of]] an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- recording [[of]] an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- analyzing the frequency ~~analysis~~ of the wave form of the voltage signal (u(n)) by an N-point DFT analysis (Discrete Fourier Transform), to determine a voltage vector (U) which contains the frequency spectrum for the voltage signal (u(n)) in the form of N complex voltages;

- analyzing the frequency ~~analysis~~ of the wave form of the current signal (i(n)) by an N-point DFT analysis (Discrete Fourier Transform), to determine a current vector (I) which contains the frequency spectrum for the current signal (i(n)) in the form of N complex currents;

- ~~the creation of~~ creating a power vector (P) by ~~multiplication~~ multiplying, element by element, of the voltage vector (U) and the current vector (I);

- ~~multiplication of~~ multiplying the power vector (P) by a weighting vector (W) that eliminates the power component that originates from the network frequency, with the power vector (P) comprising partial powers (P_k) concerning power components from the flickering source;

- ~~creation of~~ creating a flicker power (Π) with a sign value by summation of the partial powers (P_k);

- ~~analysis of~~ analyzing the sign value, with the sign value indicating in which direction from the measurement point the flickering source is to be found; and

- displaying an indication of which direction the flickering source is located in relation to the measurement point.

8. (currently amended) Method according to Claim 6, wherein the flicker power (Π) is created by the following step:

- ~~summation of~~ summing the partial powers (P_k) by the formula:

$$\Pi = \sum_{k=1}^{N} \mathrm{Re}\left\{\frac{1}{2} W_k \cdot U_k \cdot I_k^{*}\right\}$$

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9. (currently amended) Method according to Claim 6, wherein the flicker power (Π) is created by the following steps:

- ~~square demodulation (x^2)~~ square-demodulation (x^2) of the voltage signal (u(n));

- ~~square demodulation (x^2)~~ square-demodulation (x^2) of the current signal (i(n));

- ~~calculation of~~ calculating the frequency spectrum of the square-demodulated voltage signal by an N-point DFT analysis (Discrete Fourier Transform) to determine the voltage vector (U);

- ~~calculation of~~ calculating the frequency spectrum of the square-demodulated current signal by an N-point DFT analysis (Discrete Fourier Transform) to determine the current vector (I); and

- ~~creation of~~ creating the flicker power (Π) by summation of the partial powers (P_k) which contribute to the flicker phenomenon by the formula:

$$\Pi = \sum_{k=1}^{N} \mathrm{Re}\left\{ \frac{1}{2} w1_k \cdot U_k \cdot w2_k \cdot I_k^* \right\}$$

where the elements $w1_k$ and $w2_k$ replace W and eliminate the power component that originates from the network frequency and weight the correct amplitudes of the frequency components U_k and I_k, in accordance with:

$$w1_k = \begin{Bmatrix} \frac{1}{U_c} & \text{for } 1 \le k \le i \\ 0 & \text{for } k > i \end{Bmatrix}$$

$$w2_k = \begin{Bmatrix} \frac{1}{I_c} & \text{for } 1 \le k \le i \\ 0 & \text{for } k > i \end{Bmatrix}$$

where the low-frequency flickers are to be found in a frequency band up to and including tone i ($0 < f_{flicker} \le i$).

10. (canceled)

11. (currently amended) Arrangement ~~according to Claim 10~~ for deciding the direction to a flickering source in relation to a measurement point in an electricity network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from the flickering source, the arrangement comprising:

- a first recorder for recording an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- a second recorder for recording an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- a first signal processor for demodulating the current signal (i(n)) and extracting, from the demodulated current signal, only the low-frequency amplitude variations in the form of a flicker component for the current signal (i(n));

- a second signal processor for demodulating the voltage signal (u(n)) and extracting, from the demodulated voltage signal, only the low-frequency amplitude variations in the form of a flicker component for the voltage signal (u(n));

- a multiplier for creating a product by multiplication of the flicker component for current and the flicker component for voltage;

- a processor for processing the product to create one of an average value of the instantaneous power signal (Π(n)) and a summation of the partial powers Pk wherein a flicker power (Π) is obtained with a sign value that indicates in which direction the flickering source is located in relation to the measurement point; and

- a display for displaying an indication of which direction the flickering source is located in relation to the measurement point, wherein,

- the [[a]] first signal processor for signal processing of the current signal (i(n)) comprises:

- a first part for creating a first demodulated signal by means of demodulation of the current signal (i(n));

- a second for filtering to remove the signals that originate from the network frequency (f_c) in the first demodulated signal so that only the low-frequency variations remain in the form of the flicker component for current;

- the means for signal processing of the current signal (i(n)), comprises:

- means for creating a second demodulated signal by means of demodulation of the voltage signal;

- a second signal processor for filtering to remove the signals that originate from the network frequency in the second demodulated signal so that only the low-frequency variations remain in the form of the flicker component for voltage.

12. (currently amended) Arrangement for diagnostics at a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from a flickering source, the arrangement comprising:

- a first recorder for recording an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- a second recorder for recording an amplitude-modulated voltage signal (u(n)) comprising signals that originate

from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- a first signal processor for frequency analysis of the wave form of the voltage signal (u(n)) by an N-point DFT analysis (Discrete Fourier Transform), to determine a voltage vector (U) which contains the frequency spectrum for the voltage signal (u(n)) in the form of N complex voltages;

- a second signal processor for frequency analysis of the wave form of the current signal (i(n)) by an N-point DFT analysis (Discrete Fourier Transform), to determine a current vector I which contains the frequency spectrum for the current signal (i(n)) in the form of N complex currents;

- a multiplier for the creation of a power vector (P) by the multiplication, element by element, of the voltage vector (U) and the current vector (I);

- a first processor for the multiplication of the power vector (P) by a weighting vector (W) that eliminates the power component that originates from the network frequency, with the power vector (P) comprising partial powers (P_k) concerning power components from the flickering source;

- a second processor for the creation of a flicker power (Π) with a sign value, by summation of the partial powers (P_k);

- an analyzer for analysis of the sign value, with the sign value indicating in which direction from the measurement point the flickering source is to be found; and

- a display for displaying an indication of which direction the flickering source is located in relation to the measurement point, wherein,

- the first signal processor is configured to execute the steps of:

- ~~creation of~~ creating a first demodulated signal by demodulation of the current signal (i(n)), and

- filtering to eliminate the signals that originate from the network frequency (f_c) in the first demodulated signal so that only the low-frequency variations remain in the form of the flicker component for current,

- the second signal processor is configured to execute the steps of:

- ~~creation of~~ creating a second demodulated signal by demodulation of the voltage signal;

- filtering to eliminate the signals that originate from the network frequency in the second demodulated signal so that only the low-frequency variations remain in the form of the flicker component for voltage.

13. (currently amended) Method ~~according to Claim 2,~~ for deciding the direction to a flickering source in relation to

a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from the flickering source, comprising the steps:

- at a measuring point, recording [[of]] an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- at the measuring point, recording [[of]] an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- demodulating the current signal (i(n)) and extracting, from the demodulated current signal, only the low-frequency amplitude variations in the form of a flicker component for the current signal (i(n));

- demodulating the voltage signal (u(n)) and extracting, from the demodulated voltage signal, only the low-frequency amplitude variations in the form of a flicker component for the voltage signal (u(n));

- creating a product by multiplication of the flicker component for the current signal and the flicker component for the voltage signal;

- creating one of an average value of the instantaneous power signal (Π(n)) and a summation of the partial powers Pk

wherein a flicker power (Π) is obtained with a sign value that indicates in which direction the flickering source is located in relation to the measurement point; and

- displaying an indication of which direction the flickering source is located in relation to the measurement point,

wherein the sign value of the flicker power is negative when the flickering source is located below (19) the measurement point (17) and the sign value is positive when the flickering source is located above (18) the measurement point (17), and

wherein,

- the signal processing of the current signal (i(n)) comprises the steps of:

- ~~creation of~~ creating a first demodulated signal by demodulation of the current signal (i(n));

- filtering to eliminate the signals that originate from the network frequency (f_c) in the first demodulated signal so that only the low-frequency variations remain in the form of the flicker component for current;

- the signal processing of the voltage signal (u(n)) comprises the steps of:

- ~~creation of~~ creating a second demodulated signal by demodulation of the voltage signal;

- filtering to eliminate the signals that originate from the network frequency in the second demodulated signal so

that only the low-frequency variations remain in the form of the flicker component for voltage.

14. (currently amended) Method according to claim 4, wherein,

- ~~the first demodulated signal is created~~ creating the first demodulated signal by square demodulation of the current signal; and

- ~~the second demodulated signal is created~~ creating the second demodulated signal by square demodulation of the voltage signal.

15. (previously presented) Method according to claim 4, wherein,

the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 35 Hz.

16. (currently amended) Method according to claim [[3]] 1, wherein, the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 25 Hz.

17. (previously presented) Method according to claim 4, wherein, the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 25 Hz.